

WHAT IS CLAIMED IS:

1. A method of inhibiting a cytomegalovirus (CMV), the method comprising exposing a cell infected with CMV to a small inhibitory RNA molecule
5 (siRNA) that targets a CMV gene, under conditions that permit induction of ribonucleic acid interference (RNAi), such that CMV is inhibited.
2. The method of claim 1, wherein the siRNA targets a CMV immediate early gene.
3. The method of claim 1, wherein the siRNA targets a CMV early gene.
4. The method of claim 1, wherein the siRNA targets a CMV late gene.
- 10 5. The method of claim 1, wherein the siRNA is a double stranded RNA (dsRNA) molecule, each strand of which is about 18-29 nucleotides long.
6. The method of claim 5, wherein the dsRNA has a 3'dTdT sequence and a 5' phosphate group (PO4).
7. The method of claim 5, wherein each strand of the dsRNA is encoded by a sequence
15 contained within an expression vector.
8. A method of inhibiting the expression of two or more proteins simultaneously, the method comprising:
 - (a) providing an siRNA that targets a single mRNA that is translated into the two or more proteins; and
 - 20 (b) exposing the single mRNA to the siRNA under conditions that permit induction of RNAi, the RNAi inhibiting the single mRNA that is translated into the two or more proteins;such that expression of the two or more proteins is simultaneously inhibited.
9. The method of claim 8, wherein the siRNA is a double stranded RNA (dsRNA)

molecule, each strand of which is about 18-29 nucleotides long.

10. The method of claim 9, wherein each strand of the dsRNA is encoded by a sequence contained within an expression vector.
11. The method of claim 8, wherein the mRNA is expressed from exon 3, exon 2, or exon 1
5 of UL123 and UL122 genes.
12. A method of using post-transcriptional inhibition to inhibit expression of more than one protein with a single agent, the method comprising:
 - (a) providing an RNAi agent capable of targeting an exon that is present in mRNA
10 that is translated into more than one protein; and
 - (b) administering the RNAi agent to cells in which viral expression is to be inhibited;
such that expression of more than one protein is inhibited by the RNAi agent.
13. The method of claim 12, wherein the exon is exon 3 of genes encoding IE72,
15 IE86, and IE55 proteins.
14. The method of claim 12, wherein the RNAi agent is dsRNA which is greater than about 18 nucleotides and less than about 29 nucleotides in length.
15. The method of claim 12, wherein the RNAi agent is an expression vector expressing dsRNA which is greater than about 18 nucleotides and less than
20 about 29 nucleotides in length.
16. A method of inhibiting viral replication, the method comprising targeting an isolated nucleic acid to an mRNA from which more than one protein involved in viral replication is expressed, such that viral replication is inhibited.
17. The method of claim 12, wherein the mRNA is expressed from exon 3, exon 2,
25 or exon 1 of UL123 and UL122 genes.

18. The method of claim 17, wherein the mRNA expresses two or more of IE72, IE86, and IE55 of CMV.
19. An isolated nucleic acid comprising the sequence of SEQ ID No. 1 or its complement.
- 5 20. The isolated nucleic acid of claim 19, wherein T is replaced by U.
21. The isolated nucleic acid of claim 19, wherein the isolated nucleic acid is double-stranded.
22. The isolated nucleic acid of claim 21, wherein the isolated nucleic acid has 3'dTdT and 5'-PO₄.
- 10 23. An isolated nucleic acid comprising the sequence of SEQ ID No. 2 or a complement thereof.
24. The isolated nucleic acid of claim 23, wherein T is replaced by U.
25. The isolated nucleic acid of claim 23, wherein the isolated nucleic acid is double -stranded.
- 15 26. The isolated nucleic acid of claim 25, wherein the isolated nucleic acid has 3'dTdT and 5'-PO₄.
27. An RNAi agent which is targeted to a CMV nucleic acid encoding one or more CMV proteins.
28. An RNAi agent which is targeted to a CMV nucleic acid encoding one or more
20 of the group consisting of IE1, IE2, DNA polymerase, a scaffold protease, gB, and gH.
29. The RNAi agent of claim 28, wherein the RNAi agent consists of dsRNA

which is greater than about 18 nucleotides and less than about 29 nucleotides in length.

30. The RNAi agent of claim 29, wherein the dsRNA has 3'dTdT and 5'-PO₄.
31. A vector comprising the sequence of SEQ ID No. 1 and/or SEQ ID NO:2 or
5 a complement thereof.
32. The vector of claim 31, wherein T is replaced by U.
33. The vector of claim 31, wherein the vector is a plasmid vector or a viral vector.
34. The vector of claims 31, 32, or 33, wherein the vector expresses dsRNA greater than about 18 nucleotides and less than about 29 nucleotides in length.
- 10 35. The vector of claim 34, wherein the dsRNA has 5' PO₄ and 3' TT or 3'dTdT.
36. A host cell comprising the isolated nucleic acid selected from the group consisting of claims 19-26, the RNAi agent selected from the group consisting of claims 27-30, or the vector selected from the group consisting of claims 31-34.
- 15 37. The host cell of claim 36, wherein the host cell is infected with CMV.
38. A pharmaceutical composition comprising the isolated nucleic acid selected from the group consisting of claims 19-26, the RNAi agent selected from the group consisting of claims 27-30, or the vector selected from the group consisting of claims 31-34, and a pharmaceutically acceptable carrier.
- 20 39. A method of treating a condition associated with CMV infection comprising administering the pharmaceutical composition of claim 38 to a vertebrate mammal with the condition, such that the condition associated with CMV infection is treated.

40. The method of claim 39, wherein the vertebrate mammal is a human patient.
41. The method of claim 39, wherein the vertebrate animal is a non-human primate.
42. The method of claim 39, wherein the CMV-associated condition is one of the group consisting of retinitis, pneumonitis, restenosis, cervical carcinoma, prostate cancer, adenocarcinoma of the colon, disseminated viremia, and organ dysfunction.
43. The method of claim 39, wherein the administering is localized or tissue-specific.
44. The method of claim 43, wherein the CMV-associated condition is retinitis and the administering is by intravitreal injection.